What is claimed is:

1. A carbon electrode coated with a porous metal thin film with the thickness of a few Å ~ a few μm on carbon electrodes for a secondary battery.

2. A method for fabricating carbon electrode coated with porous metal film comprising:

positioning a sheet of carbon material within a vacuum chamber;

coating a porous metal film with a thickness of a few Å ~ a few μm on the surfaces of the sheet of carbon material; and

stabilizing the thusly coated carbon material under a.

3. The method of claim 2, wherein the porous metal film is coated by one of a heating deposition process, an electron beam deposition process, an ion line deposition process, a sputtering deposition process or a laser ablation process, or combination theirof.

4. The method of claim 2, wherein the porous metal is at least one of lithium, aluminum, tin, bismuth, silicon, antimony, nickel, copper, titanium, vanadium, chrome, manganese, ferrite, cobalt, zinc, molybdenum, tungsten, silver, gold, platinum, ruthenium, iridium, indium or their alloys.

5. The method of claim 2, wherein the stabilization is performed under a vacuum of below 10^{-1} torr at a temperature of 20°C ~ 100°C for 1 ~24 hours.

6. The method of claim 2, wherein the carbon material is an active material such as graphite, coke or hard carbon.

7. A lithium-ion secondary battery comprising: a carbon electrode coated with a porous metal thin film having a thickness of a few Å ~ a few μm; and an anode comprising $LiCoO_2$, $LiMn_2O_4$, $LiNiO_2$, V_6O_{13} or V_2O_5.

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